



AECOM
100 N. Broadway
20th Floor
St. Louis, MO 63102
www.aecom.com

314 429 0100 tel
314 429 0462 fax

March 23, 2022

Illinois Environmental Protection Agency
Bureau of Air
Air Quality Planning Section (#39)
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Attn: Annual Emission Report

**Re: Annual Emissions Report, Reporting Year 2021
Shell Oil Products US
Roxana Source, I.D. No. 119090AAO**

To Whom It May Concern:

AECOM Technical Services, Inc. (AECOM), on behalf of Shell Oil Products US, is submitting the enclosed Annual Emissions Report for activities at the Roxana Site. If you have any questions or need any additional information, please contact Wendy Pennington (314-452-8929) or via email at wendy.pennington@aecom.com.

Sincerely,
AECOM

Wendy Pennington, PE
Project Manager

Enclosures: Annual Emission Report, Reporting Year 2021

cc: Mr. Leroy Bealer, Shell Oil Products US
Project File

119090AAO - Shell Oil Products US

- SOURCE DATA -

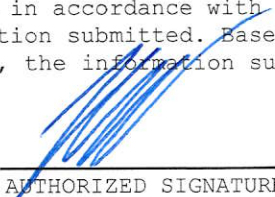
SOURCE IDS AND LOCATION	AIRS:	17-119-0044	IEPA USE ONLY	SIC 1:	4613	NAICS 1:	486910
	FINDS:		IEPA USE ONLY	SIC 2:		NAICS 2:	
	FEIN:	522074528		SIC 3:		NAICS 3:	
	D&B:			SIC 4:		NAICS 4:	
	LATITUDE:	38:50:42.3168		SIC 5:		NAICS 5:	
	LONGITUDE:	90:04:34.0752		SIC 6:		NAICS 6:	

SOURCE ADDRESS	Shell Oil Products US (SOPUS)	CONTACT: Robert Meeshegian Leroy Bealer
	Chaffer St. and 8th St. Roxana, IL 62084	PHONE: 314-429-0100 484-632-7955 Fax: E-mail: leroy.bealer@shell.com

ANNUAL EMISSION REPORT MAILING ADDRESS	AECOM	CONTACT: Robert Meeshegian Samuel Fisher
	100 N. Broadway 20th Fl St. Louis, MO 63102	PHONE: 314-296-1969 FAX: E-Mail: samuel.fisher@aecom.com

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44 (h))

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete.

	<u>3/23/2022</u>
_____ AUTHORIZED SIGNATURE	_____ DATE
<u>Leroy Bealer, Senior Program Manager</u>	<u>484-632-7955</u>
TYPED OR PRINTED NAME AND TITLE	TELEPHONE NUMBER

The Illinois EPA is authorized to require, and you must disclose, the information on this form pursuant to 35 Ill. Adm. Code 201.302 (a,b) and 254. It is not necessary to use this form in providing the information. Failure to disclose the information may result in penalties as provided for in the Environmental Protection Act, 415 ILCS 5/24-45.

119090AAO - Shell Oil Products US

- ANNUAL SOURCE EMISSIONS -

POLLUTANT CODE	SOURCE REPORTED EMISSIONS FOR 2021 (TONS/YEAR)	EMISSIONS REPORTED FOR 2020 (TONS/YEAR)	IEPA 2021 ESTIMATED EMISSIONS (TONS/YEAR)
CO	0.320536	0.282630	0.421949
CO ₂	457.907928	403.755867	602.784000
Methane	0.008777	0.007739	0.011553
N ₂ O	0.008395	0.007403	0.011051
NH ₃	0.012211	0.010767	0.016074
NO _x	0.381590	0.336464	0.502320
Part	0.029001	0.025572	0.038176
PM ₁₀	0.029001	0.025572	0.038176
PM _{2.5}	0.029001	0.025572	0.038176
SO ₂	0.002290	0.002019	0.003014
VOM	0.963104	1.002690	11.503708

119090AAO - Shell Oil Products US

- PERMIT LISTING -

PERMIT NUMBER	TYPE OF PERMIT	OPERATION NAME	STATUS	STATUS DATE	EXPIRES
10120040	CONSTRUCTION	Soil Vapor Extraction Treatment System	GRANTED	03-01-2011	04-01-2012
11050032	CONSTRUCTION	Soil Vapor Extraction Treatment System w/Dual ICE	GRANTED	05-31-2011	05-31-2012
11060036	LIFETIME	SVE Treatment System	GRANTED	07-14-2011	
12040025 *	FESOP	Treatment of Contaminated Soil Vapor	GRANTED	10-05-2021	10-05-2031

119090AAO - Shell Oil Products US

- FUEL COMBUSTION DATA -

POINT 0003 - Regenerative Thermal Oxidizer PERMIT: ~~11060036~~
 BEGAN OPERATION: 01/2012 _____ 12040025
 CEASED OPERATION: / _____ SCC: 40290013
 MODE 01 - Natural gas combustion

DESCRIPTION CORRECTION:

PERCENT THROUGHPUTS: DEC - FEB: ~~14.11 %~~ 33.02 % MAR - MAY: ~~24.61 %~~ 26.21 %
 BEGAN OPERATION: ~~06/2011~~ 01/2012 JUN - AUG: ~~29.35 %~~ 22.13 % SEP - NOV: ~~31.93 %~~ 18.65 %
 CEASED OPERATION: _____

FUEL TYPE: 1 NATURAL GAS _____ HEAT CONTENT: Natural Gas 1,000 Btu/ft3
 INPUT (MMBTU/HR): 3.0 _____ SULFUR CONTENT (%): _____
 ASH CONTENT (%): _____
 NITROGEN CONTENT (%): _____

UNITS: ~~MILLION CUBIC FEET BURNED~~ MILLION BTU BURNED

UNITS: ~~MILLION CUBIC FEET BURNED~~ MILLION BTU BURNED

ANNUAL OPERATION			PEAK OZONE SEASON OPERATION		
HOURS/DAY:	24.0	<u>24.0</u>	HOURS/DAY:	24.0	<u>24.0</u>
DAYS/WEEK:	7.0	<u>7.0</u>	DAYS/WEEK:	7.0	<u>7.0</u>
WEEKS/YEAR:	42	<u>47</u>	WEEKS/YEAR:	42	<u>13</u>
HOURS/YEAR:	7,105	<u>7,942</u>	HOURS/YEAR:	2,026	<u>2,182</u>
			START TIME:	<u>00:00</u>	
			END TIME:	<u>23:59</u>	
RATE/HR:	0.2700	<u>0.32</u>	RATE/HR:	0.2800	<u>0.26</u>

119090AAO - Shell Oil Products US

- FUEL COMBUSTION DATA -

POINT 0003 - Regenerative Thermal Oxidizer PERMIT: ~~11060036~~
 BEGAN OPERATION: 01/2012 12040025
 CEASED OPERATION: / SCC: 40290013

MODE 01 - Natural Gas Combustion

POLLUTANT CODE	METHOD		EMISSION FACTOR		EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
CO	3	3	84	84 lbs/10 ⁶ scf	0.0221	0.0263
CO ₂	3	3	120,000	120000 lbs/10 ⁶ scf	31.5205	37.5951
Methane	3	3	2.3	2.3 lbs/10 ⁶ scf	0.0006	0.0007
N ₂ O	3	3	2.2	2.2 lbs/10 ⁶ scf	0.0006	0.0007
NH ₃	3	3	3.2	3.2 lbs/10 ⁶ scf	0.0008	0.0010
NO _x	3	3	100	100 lbs/10 ⁶ scf	0.0263	0.0313
PART	3	3	7.6	7.6 lbs/10 ⁶ scf	0.0020	0.0024
PM ₁₀	3	3	7.6	7.6 lbs/10 ⁶ scf	0.0020	0.0024
PM _{2.5}	3	3	7.6	7.6 lbs/10 ⁶ scf	0.0020	0.0024
SO ₂	3	3	0.6	0.6 lb/10 ⁶ scf	0.0002	0.0002
VOM*	3	NA	5.5	NA lbs/10 ⁶ scf	0.00715	NA

POLLUTANT CODE	METHOD		EMISSION FACTOR		OZONE SEASON EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
NO _x	3	3	100	100 lbs/10 ⁶ scf	0.148	0.0252
VOM*	3	NA		NA lbs/10 ⁶ scf	0	NA

CAPTURING CONTROLS:

CAPTURING STACKS:

STACK 0003 CAPTURE EFFICIENCY: 100.00 % 100.00 %

*VOM emissions from combustion are accounted for in the SVE emissions on page 9.

119090AAO - Shell Oil Products US

- FUEL COMBUSTION DATA -

POINT 0003 - Regenerative Thermal Oxidizer PERMIT: ~~11060036~~
 BEGAN OPERATION: / 01/2012 12040025
 CEASED OPERATION: / _____ SCC: 40290013
 MODE 02 - Soil Vapor Combustion

DESCRIPTION CORRECTION:

PERCENT THROUGHPUTS: DEC - FEB: 27.96 % MAR - MAY: 32.65 %
 BEGAN OPERATION: / 01/2012 JUN - AUG: 23.17 % SEP - NOV: 16.21 %
 CEASED OPERATION: / _____

FUEL TYPE: 9 OTHER GASEOUS FUEL-SOIL VAPORS HEAT CONTENT: Soil Vapors 21,070 Btu/lb
 INPUT (MMBTU/HR): _____ SULFUR CONTENT (%): _____
 ASH CONTENT (%): _____
 NITROGEN CONTENT (%): _____

UNITS: MILLION BTU BURNED

UNITS: MILLION BTU BURNED

ANNUAL OPERATION		PEAK OZONE SEASON OPERATION	
HOURS/DAY:	<u>24.0</u>	HOURS/DAY:	<u>24.0</u>
DAYS/WEEK:	<u>7.0</u>	DAYS/WEEK:	<u>7.0</u>
WEEKS/YEAR:	<u>47</u>	WEEKS/YEAR:	<u>13</u>
HOURS/YEAR:	<u>7,942</u>	HOURS/YEAR:	<u>2,182</u>
		START TIME:	<u>00:00</u>
		END TIME:	<u>23:59</u>
RATE/HR:	<u>0.66</u>	RATE/HR:	<u>0.56</u>

119090AAO - Shell Oil Products US

- FUEL COMBUSTION DATA -

POINT 0003 - Regenerative Thermal Oxidizer PERMIT: ~~11060036~~
 BEGAN OPERATION: / 01/2012 12040025
 CEASED OPERATION: / _____ SCC: 40290013

MODE 02 - Soil Vapor Combustion

POLLUTANT CODE	METHOD		EMISSION FACTOR		EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
CO		3		84 lbs/10 ⁶ scf		0.0544
CO ₂		3		120,000 lbs/10 ⁶ scf		77.7179
Methane		3		2.3 lbs/10 ⁶ scf		0.0015
N ₂ O		3		2.2 lbs/10 ⁶ scf		0.0014
NH ₃		3		3.2 lbs/10 ⁶ scf		0.0021
NO _x		3		100 lbs/10 ⁶ scf		0.0648
PM		3		7.6 lbs/10 ⁶ scf		0.0049
PM ₁₀		3		7.6 lbs/10 ⁶ scf		0.0049
PM _{2.5}		3		7.6 lbs/10 ⁶ scf		0.0049
SO ₂		3		0.6 lb/10 ⁶ scf		0.0004
VOM*		NA		NA lbs/10 ⁶ scf		NA

POLLUTANT CODE	METHOD		EMISSION FACTOR		OZONE SEASON EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
NO _x		3		100 lbs/10 ⁶ scf		0.05

CAPTURING CONTROLS:

CAPTURING STACKS:

STACK 0003 CAPTURE EFFICIENCY: 100.00 %

*VOM emissions from combustion are accounted for in the SVE emissions on page 9.

119090AAO - Shell Oil Products US

- OTHER SOURCE DATA -

POINT 001 - Soil vapor extraction system PERMIT: ~~11060036~~
 BEGAN OPERATION: ~~05/2011~~ 01/2012 12040025
 CEASED OPERATION: / SCC: 50410310
 MODE: 01 -

DESCRIPTION CORRECTION:

PERCENT THROUGHPUTS: DEC - FEB: ~~20.87%~~ 21.52 % MAR - MAY: ~~26.12%~~ 25.91 %
 BEGAN OPERATION: ~~12/2010~~ 01/2012 JUN - AUG: ~~14.69%~~ 27.47 % SEP - NOV: ~~24.35%~~ 25.09 %
 CEASED OPERATION: /

UNITS: HOURS OPERATED

UNITS: HOURS OPERATED

ANNUAL OPERATION			PEAK OZONE SEASON OPERATION		
HOURS/DAY:	24.0	<u>24.0</u>	HOURS/DAY:	24.0	<u>24.0</u>
DAYS/WEEK:	7.0	<u>7.0</u>	DAYS/WEEK:	7.0	<u>7.0</u>
WEEKS/YEAR:	42	<u>47</u>	WEEKS/YEAR:	42	<u>13</u>
HOURS/YEAR:	7,105	<u>7,942</u>	HOURS/YEAR:	2,026	<u>2,182</u>
			START TIME:		<u>00:00</u>
			END TIME:		<u>23:59</u>
RATE/HR:	0.7000	<u>NA*</u>	RATE/HR:	0.3600	<u>NA*</u>

*The rate/hr is not applicable because emissions are estimated using a measured emissions rate (lb/hr) and the system operating hours.

119090AAO - Shell Oil Products US

- OTHER SOURCE DATA -

POINT 001 - Soil vapor extraction system PERMIT: ~~11060036~~
 BEGAN OPERATION: ~~05/2011~~ 01/2012 12040025
 CEASED OPERATION: _____ SCC: 50410310

MODE: 01 -

POLLUTANT CODE	METHOD		EMISSION FACTOR		EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
VOM	2	1		NA*	2.97	0.24

POLLUTANT CODE	METHOD		EMISSION FACTOR		OZONE SEASON EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
VOM	1	1		NA*	0.41	0.21

CAPTURING CONTROLS:

CONTROL 0001 CAPTURE EFFICIENCY: 100.00 % 100.00 %

CAPTURING STACKS:

STACK 0003

*The rate/hr is not applicable because emissions are estimated using a measured emissions rate (lb/hr) and the system operating hours.

119090AAO - Shell Oil Products US

- CONTROL DEVICE DATA -

CONTROL 0001 - Regenerative Thermal Oxidizer PERMIT: ~~11060036~~
 BEGAN OPERATION: ~~06/2011~~ 01/2012 12040025
 CEASED OPERATION: / CONTROL CODE: 319

DESCRIPTION CORRECTION:

REMOVAL EFFICIENCY

POLLUTANT	ANNUAL OPERATION				PEAK OZONE SEASON OPERATION			
	EFFICIENCY		METHOD		EFFICIENCY		METHOD	
	IEPA	REPORTED	IEPA	REPORTED	IEPA	REPORTED	IEPA	REPORTED
VOM	97.00 %	<u>99.3%*</u>		<u>1</u>		99.3%		<u>1</u>

CAPTURING CONTROLS:

CAPTURING STACKS:

STACK 0003 CAPTURE EFFICIENCY: 100.00 % 100.00 %

*The RTO was tested for VOM destruction efficiency on June 25 and June 26, 2013.

- STACK DATA -

STACK	DIAMETER (FT)	HEIGHT (FT)	FLOW RATE (ACFM)	TEMPERATURE (°F)
0003 - Regenerative Thermal Oxidizer	2.50 <u>2.5</u>	19 <u>18.5</u>	10,000 <u>10,000</u>	200 <u>200</u>